UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30501

CSAH NO. 7

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 30501, Piers 1 and 2, were found to be in good condition with no structurally significant defects observed. Light scaling with up to 1/8 inch maximum penetration was observed around both piers. A minor scour depression with a light accumulation of timber debris was observed at the upstream nose of Pier 1. The channel bottom around the substructure units appeared stable with no evidence of significant scour.

INSPECTION FINDINGS:

(A) Light scaling with up to 1/8 inch maximum penetration was observed on the concrete pier shafts from the waterline to 4 feet below the waterline.

(B) A minor scour depression, 2 foot in radius and 1 foot deep, was observed at the upstream nose of Pier 1.

(C) A light accumulation of 2-inch-diameter-and-smaller timber debris was observed on the channel bottom at the upstream nose of Pier 1.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 30501

Feature Crossed: The Rum River

Feature Carried: CSAH No. 7

Location: District 3 - Isanti County

Bridge Description: The bridge superstructure consists of three spans of multiple steel girders supported by two concrete hammerhead type piers and two concrete abutments. The piers are numbered 1 and 2 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker

Dive Team: Clayton G. Brookins, Michelle D. Koerbel

Date: September 26, 2002

Weather Conditions: Rainy, ± 50^{o} F

Underwater Visibility: ± 2 Foot

Waterway Velocity: ± 1.5 fps

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of an oblong rectangular shaft with rounded noses and rests upon a rectangular concrete footing supported on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 7.8 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the cap at the upstream end of Pier 2.

Water Surface: The waterline was approximately 11.7 feet below reference.
Assumed Waterline Elevation = 88.3

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

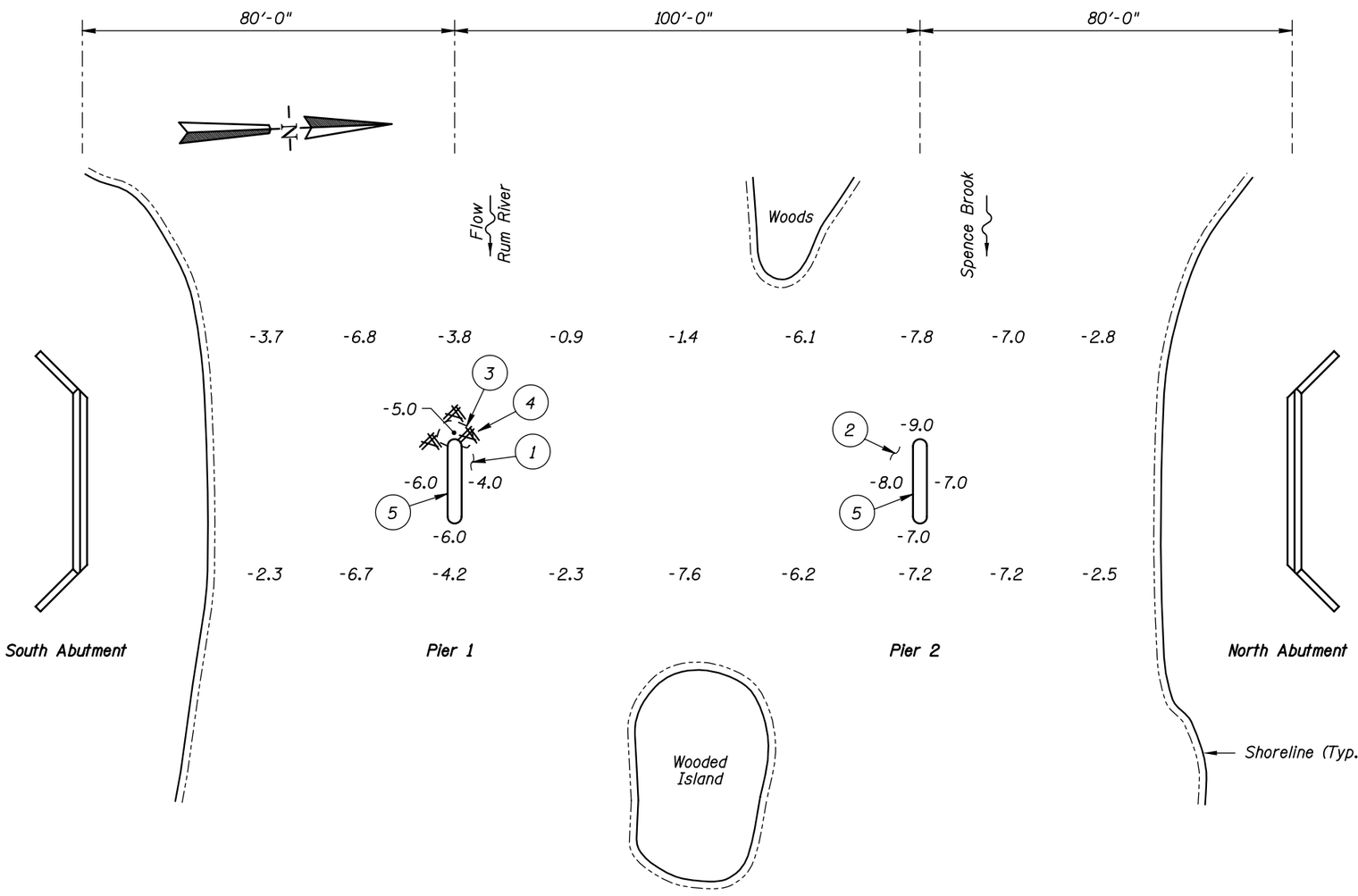
Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/09/02

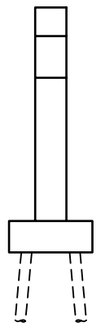
Item 113: Scour Critical Bridges: Code O/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes ___X__ No



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 25, 2002, the waterline was located approximately 11.7 feet below the top of the cap at the upstream end of Pier 2. Since insufficent bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 88.3.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES

(1) The channel bottom consisted of sand with up to 1 foot of probe rod penetration.

(2) The channel bottom consisted of silty sand and scatterd riprap with up to 6 inches of probe rod penetration.

(3) A scour pocket, 2 foot in radius and 1 foot deep, was observed at the upstream nose of Pier 1.

(4) A minor accumulation of 2-inch-diameter-and-smaller timber debris was observed on the channel bottom at the upstream nose of Pier 1.

(5) A band of light scaling was observed from the waterline to 4 feet below the waterline with up to 1/8 inch of penetration.

Legend

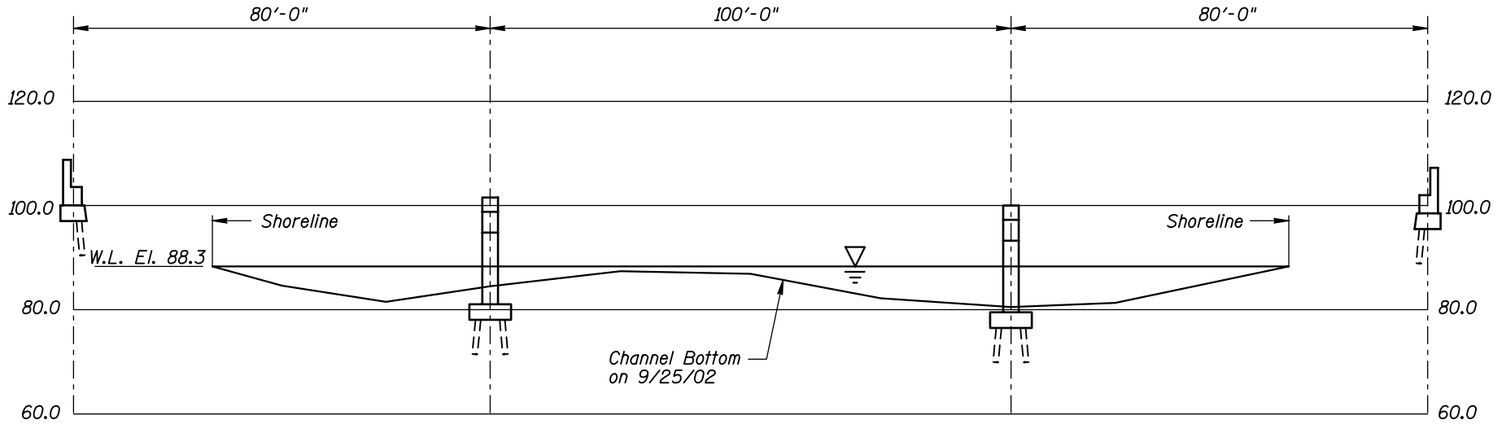
-6.0	Sounding Depth from Waterline (8/25/02)
	Scour Depression
	Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

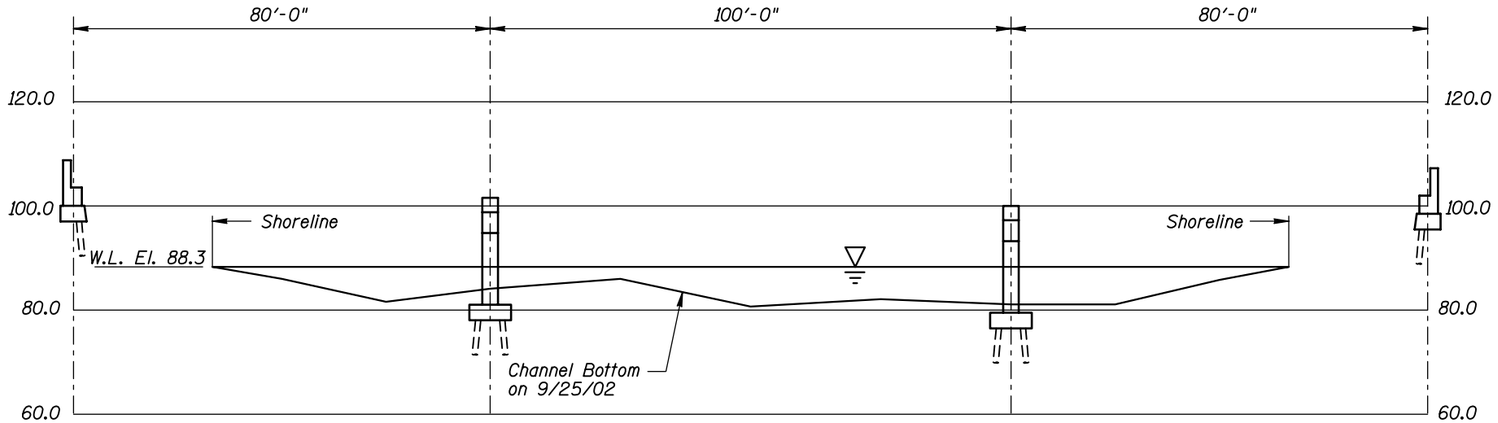
STRUCTURE NO. 30501
OVER THE RUM RIVER
DISTRICT 3, ISANTI COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35123050I		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=30'
Code: 351230501		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking Northeast.

Photograph 2. View of Pier 1, Looking North.

Photograph 3. View of Pier 2, Looking South.

Photograph 4. View of Island in Middle of Waterway Downstream of Bridge, Looking Southeast.

Photograph 5. View of Island in Middle of Waterway Upstream of Bridge, Looking Southwest.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 25, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 30501 WEATHER: Rainy, "50° F
WATERWAY CROSSED: The Rum River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Clayton G. Brookins, Michelle D. Koerbel
EQUIPMENT: SCUBA, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera
TIME IN WATER: 11:00 A.M.
TIME OUT OF WATER: 11:30 A.M.
WATERWAY DATA: VELOCITY "1.5 fps.
VISIBILITY "2 foot
DEPTH 7.8 feet maximum at Pier 2
ELEMENTS INSPECTED: Piers 1 and 2
REMARKS: Overall, the concrete of the piers was in good condition. A band of light scaling, extending from the waterline to 4 feet below the waterline, with up to 1/8 inch of penetration was observed at both piers. A minor scour depression, 2 foot in radius and 1 foot deep, was observed on the upstream nose of Pier 1 with a minor accumulation of timber debris in the base of the scour.

FURTHER ACTION NEEDED: _____ YES ___X___ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 30501
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Rum River

INSPECTION DATE September 25, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	6.0’	N	7	N	9	N	7	7	6	6	7	6	8	N	N	N	N	N
	Pier 2	9.0’	N	7	N	9	N	7	8	6	6	N	6	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete of the piers was in good condition. A band of light scaling, extending from the waterline to 4 feet below the waterline, with up to 1/8 inch of penetration was observed at both piers. A minor scour depression, 2 foot in radius and 1 foot deep, was observed on the upstream nose of Pier 1 with a minor accumulation of timber debris in the base of the scour.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.